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ABSTRACT

A study was done of pre-admission or early performance predictors of persistence versus academic failure among baccalaureate program nursing students. As part of a larger longitudinal research project, 155 students from four successive classes of students admitted to the program were studied, using multiple predictor and criterion variables. The study used five standardized tests (including the Eysenck Personality Inventory) and a pre-requisite grade point average as predictor instruments, and four academic performance criteria. The findings indicated that the most significant predictor of persistence versus academic failure in the school of nursing was the seven pre-requisite course grade point average. Other combinations of predictors analyzed by multiple regression failed to produce significant results. In addition, the first semester experience (theory and clinical course grades, and clinical ratings) clearly enhanced the prediction of academic failures. The results suggested two programmatic strategies, the first of which is "early intervention" including tutoring and faculty mentoring for students with academic problems, and the second is "minimizing losses" by over-enrolling nursing programs and considering the first semester as a make-or-break trial. Included are six tables and nine references. (JB)

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PREDICTING STUDENT NURSE ACADEMIC FAILURES: AN ANALYSIS OF FOUR BACCALAUREATE CLASSES

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Running Head: Predicting Academic Failure

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Abstract

Two distinct types of programmatic strategies can be used to deal with students identified as potential academic failures in nursing school programs. The first is "early intervention" and the second could be labeled "minimizing losses." This study's purpose was to identify pre-admission or early performance predictors of persistence versus academic failure. As part of a larger longitudinal research project, students who failed academically out of four successive classes of students admitted to a baccalaureate program (N=155) were studied using multiple predictor and criterion variables. The findings support the use of certain pre-requisite GPA data. Early clinical and theory grades help identify "at risk" students. Suggestions are offered for types and timing of interventions.

PREDICTING STUDENT NURSE ACADEMIC FAILURES: AN ANALYSIS OF FOUR BACCALAUREATE CLASSES

Introduction

The NLN 1986 study of retention in Schools of Nursing reported by Rosenfeld (1988) indicated that compared to general attrition rates at colleges, nursing had a remarkably high net retention rate. She attributed this to Herculean efforts by faculty to ensure the survival of nursing programs (p. 200). An acknowledged methodological problem with the statistics in that study related to the use of net rates (not accounting for students who may have replaced dropouts on a year to year basis in programs) rather than reporting actual attrition rates.

Despite faculty efforts, the deterioration of retention rates in Schools of Nursing is a problem consistent with the decreased numbers of students in applicant pools as programs are tempted to lower their admission standards to attract more candidates. Even if admission standards are not being lowered in the majority of schools, as a recent study suggests (Grubbs, 1989), admitted students are likely falling closer to the minimal admission requirement as the numbers in applicant pools decrease or programs are taken off of impaction status due to fewer applicants. This is sometimes translated into a recruitment problem. We have been spoiled with large applicant pools from which we could draw the best and the brightest.

The following analysis of drop-out data is a portion of a much

larger longitudinal student outcome assessment study which tracked four classes of nursing students (N=155). They were pre-tested upon admission to the nursing program, followed through their five semesters of study with several outcome variables, and are currently being assessed in the work place. The predictors of the longitudinal study of educational outcomes were reported in the Journal of Nursing Education (Wold & Worth,1990).

This study uses the same predictors, along with the Eysenck Personality Inventory--which was administered to two of the classes--to analyze the drop out data and determine the predictability of student academic failures.

Method

Setting and Population:--The population consisted of students from the CSUC Longitudinal Student Nurse Study which tracked four successive classes of nursing students (N=155). These students were admitted to a five semester upper division generic baccalaureate nursing program. The project had 100% participation on the part of admitted students. The admission criteria consisted of accepting those students from the applicant pool who had the highest seven course pre-requisite GPA. The Mean Pre-Req GPA for the admitted students was 3.40 with a Standard Deviation of .37. The student drop outs (N=24) were evaluated by faculty members and categorized into two groups, those who dropped out for personal reasons (N=8) (illness, financial, decision not to be a nurse, etc.) and those who failed

academically (N=16).

Predictor Instruments:

We used five standardized tests as predictor instruments:

1. Witkin's Group Embedded Figures Test (GEFT)
2. Extended Range Vocabulary Test
3. Inference Test
4. SAT Verbal
5. Eysenck Personality Inventory

In addition, we used:

6. Pre-Requisite GPA (the composite of seven courses: anatomy, physiology, bacteriology, organic chemistry, inorganic chemistry, general psychology and child development.)

Criterion:

The criterion used were:

1 Theory Grades in Semester One of the Nursing Program (N83)
2. Clinical Grades in Semester One of the Nursing Program (N84)
3. Composite Faculty Clinical Nurse Rating Scale of Semester One.
4. Program Persistence versus Academic Failure

Procedure:--At the School of Nursing orientation meeting of each of the four successive classes, (Fall, 1984- Spring, 1986), 100% of the admitted students took the predictor tests included in the study. The Eysenck Personality Inventory was added to the battery with the last two classes only, and will be dealt with separately.

SAT Verbal scores were obtained from the college records for

those students who had taken the SAT. The SAT scores were later omitted from the data analyses because of the limitations placed on the population of the study. Only four of the students who failed academically had taken the SAT.

Analyses

All data analysis was conducted using SPSS statistical procedures. Table 1 shows the means and pooled T Test results for the persisting group and the academic failures using the standardized tests and the pre-req GPA as predictor variables.

Insert Table 1 here

The persistence-academic failure criterion was correlated using multiple regression with the four pre-tests: SAT Verbal, Witkin's Group Embedded Figures, Inference Test and the Extended Range vocabulary Test used in the SREB Replication Study (N=60). The prediction was not significant. The Pre-requisite GPA was added to the set. Again, The multiple R was not significant. There were only four academic failures in the group due to small numbers who had taken the SAT.

In further analysis, the SAT verbal was removed from the set. The resulting intercorrelations of predictor and criterion variables are shown in Table 2.

Insert Table 2 here

With all five variables entered and persistence--academic failures the dependent variable, the multiple R is .27 ($F=2.88$, $P<.02$). As indicated on Table 3, only one variable, Pre-requisite GPA added significantly to this multiple R.

Insert Tables 3 & 4

The seven course prerequisite GPA, first semester faculty clinical rating composite score (Table 4) and nursing clinical (N84) and theory (N83) grades in first semester Nursing Courses were entered as a predictor set for the persistence--failure dimension. The multiple regression summary is shown on Table 5.

Insert Table 5

The Pre-Requisite GPA, first semester faculty composite clinical rating and the first semester clinical grade incrementally predict academic failure.

Table 6 contains the results of a pooled T test for the persisting group and the academic failures using the Pre-Req GPA, Average Faculty Clinical Rating in N84, theory grade in N83 and clinical grade in N84.

Insert Table 6

All variables significantly discriminate between program persisters and academic failure withdrawals. The lower the grades and ratings the more likely the student will not persist in the nursing program.

Eysenck Personality Inventory

The Eysenck Personality Inventory (EPI) consists of a brief written examinee yes/no response to 57 items. It is designed to measure personality in terms of two pervasive independent dimensions. These are extraversion/introversion and neuroticism/stability. It has a built in lie scale. The retest reliability of the EPI is in excess of .85 even after several months. Extraversion as opposed to introversion refers to the outgoing, uninhibited, impulsive, social inclinations of people. Neuroticism refers to general emotional overresponsiveness , and tendency to neurotic breakdown under stress. (Eyesenck, 1962, p. 5). It has been used extensively in efforts to predict academic success in special populations with mixed results, suggested relevance and requests for replication. (Goh & More, 1978; Shriberg, Etal., 1977; Green, 1977; Bartram & Dale, 1982; Brown & Stone, 1972).

The Eysenck Personality Inventory was given to the last two classes of students in the study when they entered the nursing

program. (N=75). Multiple regression analysis indicated no significant prediction of the academic failure criterion using Eysenck extraversion/introversion and neuroticism/stability scales, and the criteria clinical GPA (N84), pre-req GPA or theory GPA (N83). There was a significant correlation, -.27 ($p<.01$) on Eysenck neuroticism and N84 average clinical rating scales in the first semester. The higher the neuroticism score, the lower the clinical rating scale composite score in N84.

Discussion/Recommendations

The data in this drop out study supports the findings of the previous analysis of success prediction variables (Wold & Worth, 1990). The most significant predictor of persistence versus academic failure in the school of nursing was the seven pre-requisite course GPA. Other combinations of predictors analyzed by multiple regression failed to produce significant results.

Not surprisingly, the first semester experience (theory, and clinical course grades and clinical ratings) clearly enhances the prediction of academic failures. This suggests two distinct programmatic philosophies/strategies might be employed. The first strategy is "early intervention." Students with academic problems in their first semester are clearly at risk of academic failure. Intervention at this point (e.g. tutoring, faculty mentoring, etc.) might help to reduce attrition caused by academic failure. The second strategy might be called "minimize

losses." This philosophy might be achieved by over-enrolling nursing programs and considering the first semester as a make-or-break trial. Students with academic difficulties during this semester would be removed from the program. While harsher, perhaps, this strategy should decrease later academic failures.

The positive correlation of the Eysenck neuroticism scale with the faculty clinical rating scale could be due to chance. It is also possible that the scale reflects faculty perceptions of the students' negative personality characteristics in relationships with patients. Overall, the Eysenck Personality Inventory needs considerable further testing with greater numbers of academic failures to assure its validity as a predictor.

The data in this study supports the use of the Pre-requisite GPA as the admission standard for the School of Nursing. During cycles when the admitted class mean Pre-requisite GPA is lower, measures to assist students to promote academic success and persistence in the nursing program should be instituted. Cameron & Buccheri (1989), discuss several tactics that might prove useful such as study skills and time management workshops, peer networking and support programs, financial aid assistance, enhanced faculty advising relationships and tutored study groups in response to need. School of Nursing big brother/sister programs can also be used successfully. Instituting this kind of effort could decrease academic failure for at risk students who could be identified early in the nursing program.

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TABLE 1

POOLED T TEST OF STANDARDIZED TESTS AND PRE-REQUISITE GPA AS PREDICTORS OF ACADEMIC FAILURE

	Mean	SD	T	P
Predictors:				
Inference Test-1*	14.71	2.79	1.78	.077
2*	13.27	4.28		
Extended Range Vocabulary-1*	25.14	7.27	1.43	.155
2*	22.33	6.43		
Witken's Group Emb. Fig-1*	12.78	4.12	1.22	.226
2*	11.40	4.55		
SAT Verbal-1*	470.70	74.56	.51	.612
2**	450.00	130.38		
Pre-req GPA-1*	3.46	.35	3.44	.001
-2*	3.15	.29		

*1 students who completed the program (N=131)
*2 Students who withdrew for Academic Reasons (N=16)
**2 " " " " " " (N=4)
p=(.01)

TABLE 2

INTERCORRELATIONS OF PREDICTOR AND CRITERION VARIABLES

	1	2	3	4	5
1. Embedded Figures		.13	.37*	.05	.10
2. Extended Range Vocabulary			.49*	.19*	.12
3. Inference Test				.12	-.14
4. Pre-req GPA					-.24
5. Academic Failures (N=16 of 146)					

* p<.01
** p<.05

Table 3

MULTIPLE R SUMMARY OF PRE-REQ GPA AND STANDARDIZED TESTS WITH ACADEMIC FAILURES AS THE DEPENDENT VARIABLE

Variable	F	p<	Multiple R	Overall F	p<
Pre-Req GPA	8.96	.003	.242	8.96	.003
Inference Test	2.21	.140	.270	5.62	.004
Embedded Figs	.35	.556	.274	3.85	.011
Ext Range Voc.	.07	.797	.275	2.88	.025

TABLE 4

FACULTY CLINICAL EVALUATION TOOL

	Poor 1	Below Average 2	Average 3	Above Average 4	Superior 5
1. Written communication (class assignments, charting, care plans, documents Nsg. Process)	( )	( )	( )	( )	( )
2. Oral Communication (with Instructor, patient, staff)	( )	( )	( )	( )	( )
3, Relates theory to clinical practice	( )	( )	( )	( )	( )
4. Psycho-social assessment skills	( )	( )	( )	( )	( )
5. Physical assessment skills	( )	( )	( )	( )	( )
6. Planning skills (priority and goal seting, organizational skills)	( )	( )	( )	( )	( )
7. Implementation skills	( )	( )	( )	( )	( )
8. Evaluation skills (patients & self)	( )	( )	( )	( )	( )

TABLE 5

MULTIPLE R SUMMARY OF PRE-REQ GPA AND SEMESTER ONE EVALUATIONS AS PREDICTORS OF ACADEMIC FAILURES

Variable	F	p<	Multiple R	Overall F	p<
PreReq GPA	10.33	.002	.260	10.33	.002
N83 Grade	13.47	.000	.386	12.35	.000
N84 Grade	3.93	.050	.415	9.72	.000
Fac Clin Rate	.37	.542	.418	7.35	.000

TABLE 6

POOLED T TEST OF PRE-REQ GPA AND SEMESTER ONE EVALUATIONS AS PREDICTORS OF ACADEMIC FAILURE

Variable	Mean	SD	T	P
Pre-Req GPA				
*1	3.46	.35	3.44	.001
*2	3.15	.29		
Av.Clin.Rating				
*1	3.94	.33	8.98	.000
*2	3.03			
N83 Theory Grade				
*1	2.89	.41	3.41	.001
*2	2.50	.50		
N84 Clinical Grade				
*1	3.59	.68	4.41	.000
*2	2.78	.40		

*1=Persisting students (N=131)
*2=Academic failures (N=15)
p=(.01)